

BioBrief

2-STAGE IMPLANT PLACEMENT
WITH SOFT TISSUE THICKENING

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Vertical Bone Augmentation with Bone Plate
Technique and Soft Tissue Phenotype Modification

leading regeneration

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The Approach

Vertical ridge augmentation was performed using allogenic cortical plates fixed with microscrews to create a stable, space-maintaining box, which was densely packed with vallos® mineralized cortico-cancellous granules hydrated with the rhPDGF-BB component of GEM 21S°. Five months later, the implants were placed, and the peri-implant soft tissue phenotype was enhanced using Geistlich Mucograft® and Geistlich Fibro-Gide® to improve soft-tissue height and thickness.

“The patient had high esthetic demands and specifically wanted to avoid autogenous grafting. Remarkably, this case was completed with 0% autogenous tissue, demonstrating that outcomes traditionally thought to require autogenous grafts can be achieved otherwise.”

The Risk Profile

	Low Risk	Medium Risk	High Risk
Patient’s esthetic requirements	Low	Medium	High
Height of smile line	Low	Medium	High
Gingival biotype	Thick - “low scalloped”	Medium – “medium scalloped”	Thin - “high scalloped”
Infection at implant sight	None	Chronic	Acute
Bone height at adjacent tooth site	≤ 5 mm from contact point	5.5 - 6.5 mm from contact point	≥ 7 mm from contact point
Restorative status of adjacent tooth	Intact		Restored (#8 has been restored)
Width of tooth gap	1 tooth (≥ 7 mm)	1 tooth (≤ 7 mm)	2 teeth or more
Soft-tissue anatomy	Intact		Compromised
Bone anatomy of the alveolar ridge	No defect	Horizontal defect	Vertical defect

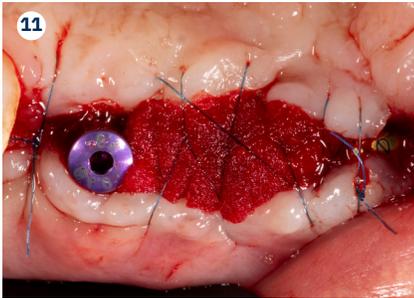
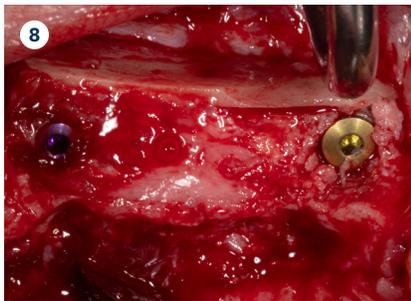
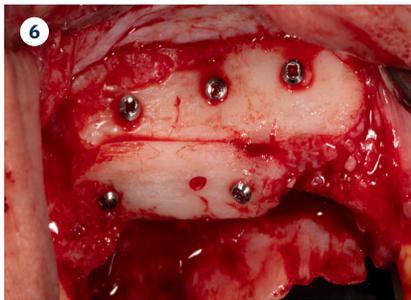
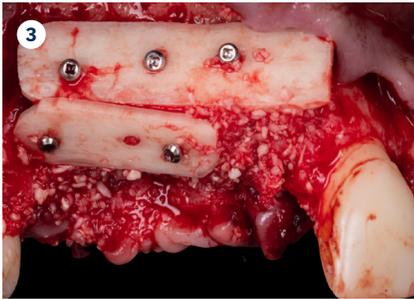
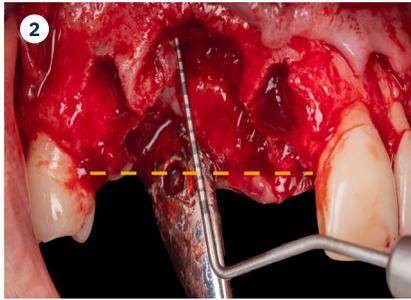
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Dr. Muhammad H. Saleh, Diplomate of the American Board of Periodontology, is a full-time faculty member at the University of Michigan and an internationally recognized lecturer in periodontology and implant dentistry. He has published over 140 peer-reviewed articles and reviews for leading Q1 journals. His numerous honors include the 2021 AAPF Schoor Award, 2022 Ramfjord Symposium Award, 2022 AAP Institute Award, 2024 AAPF LEAD and Nevins Awards, and the 2025 Roy H. Roberts Award.





The Outcome

Vertical ridge augmentation of the maxillary anterior was achieved using allogenic cortical bone plates fixed with microscrews to create a box configuration, filled with vallos[®] mineralized cortico-cancellous granules mixed with rhPDGF-BB component of GEM21S[®]. At implant placement, soft tissue phenotype was enhanced using Geistlich Mucograft[®] and Geistlich Fibro-Gide[®].

- 1 Preoperative view showing the anterior maxillary defect with loss of #6 and #7; #5 and #8 are planned to be extracted because of severe mobility and advanced bone loss.
- 2 Full-thickness mucoperiosteal flap elevation revealing a vertically and horizontally deficient ridge in the #5-8 region, prepared for augmentation.
- 3 Adaptation and fixation of two allogenic cortical bone plates to the native ridge using microscrews to create a "box" configuration for vertical bone augmentation. The box between and around the plates is packed with vallos[®] mineralized cortico-cancellous granules mixed with rhPDGF-BB component of GEM 21S[®], completing the three-dimensional reconstruction of the defect.
- 4 Immediate closure with PTFE sutures providing tension-free primary closure over the augmented site.
- 5 Site at five months post-op.
- 6 Re-entry after healing demonstrating well integrated cortical plates and a vertically augmented ridge suitable for implant placement.
- 7 Occlusal view showing well integrated particulate bone at relatively early stage.
- 8 Placement of two implants into the regenerated ridge, with a regular diameter implant anteriorly and a wide diameter implant posteriorly.
- 9 Geistlich Mucograft[®] is laid on top of the implants before flap closure to improve the tissue phenotype.
- 10 Flap Closure.
- 11 Occlusal view after the second stage for implant uncover with Geistlich Fibro-Gide[®] left between the flap intentionally slightly exposed. Due to volume stability of Geistlich Fibro-Gide[®], it aids in maintaining tissue verticality during healing.
- 12 Occlusal view after 2 weeks of the second stage showing excellent healing of Geistlich Fibro-Gide[®] with secondary intention with traces of keratinized tissue forming between wound edges. Both healing abutments were replaced with bigger sizes to aid with tissue contouring before final restoration.

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Keys to Success



- Precise adaptation and rigid fixation of the cortical allograft plates with microscrews to create a stable “box” and maintain space.
- Dense, void-free packing of particulate allograft within the box.
- Careful flap release, tension-free primary closure, and stable suturing to protect the grafted volume.
- Growth factors (rhPDGF-BB component of GEM 21S®) can boost healing enabling complex augmentations to be performed without necessitating autogenous grafting.

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Rigid fixation of cortical plates creating a stable, space-maintaining box with tension-free soft tissue closure are the most critical factors for predictable vertical ridge augmentation.”

For more information, please visit:
www.geistlich.us

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For more information on contraindications, precautions, and directions for use, please refer to the Instructions for Use at:
<https://www.geistlich-na.com/dental-professionals/instructions-for-use>

Disclaimer: These results are not guaranteed; individual outcomes may vary depending on patient circumstances. This information is for informational purposes only and may not reflect Geistlich's official position, opinion, or recommendation. Treatment decisions are made at the physician's discretion, based on the unique needs of each patient.

